



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/899,530	07/06/2001	Toshiya Kojima	Q64665	3383

7590 05/23/2002

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, NW
Washington, DC 20037-3213

EXAMINER

LIANG, LEONARD S

ART UNIT	PAPER NUMBER
----------	--------------

2853

DATE MAILED: 05/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/899,530

Applicant(s)

KOJIMA ET AL.

Examiner

Leonard S Liang

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-12 is/are rejected.
- 7) ☒ Claim(s) 3 and 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "170" has been used to designate both a photosensitive thermal recording material (See page 12, line 15) and a developing section (See page 12, line 17). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 1 is objected to because of the following informalities: The claim states "wherein, if a period of on/off control of the printing mode is T1 and a period of on/off control of **the at least one** ordinary mode..." does not make sense. It will be construed that the claim should read "wherein, if a period of on/off control of the printing mode is T1 and a period of on/off control of **at least one** ordinary mode..." Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

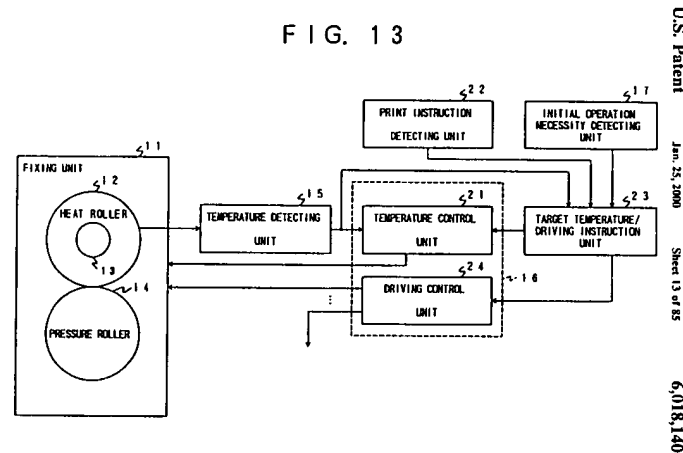
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose (US Pat 6018140), in view of Sakai (US Pat 5682576).

Hirose discloses, with respect to claim 1, an image-forming device which forms an image on a recording material at a heating drum (See figure 13, reference 12) heated to a predetermined temperature (See figure 13, references 11-14; column 1, lines 11-25), the device comprising: a

Art Unit: 2853

heating device which heats the heating drum (See figure 13, reference 13; column 1, lines 27-30);



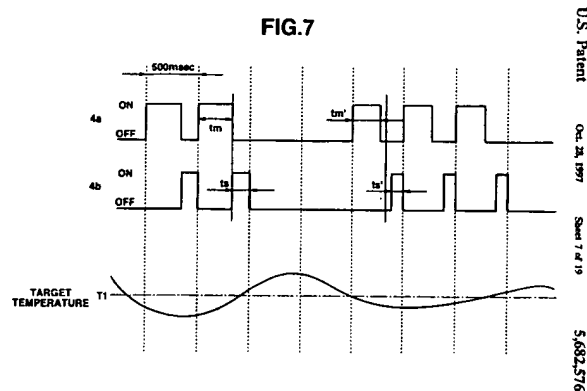
and a control device which controls the heating device by on/off control (See figure 4; figure 9; figure 13, reference 21; column 1, lines 11-25; column 3, lines 18-21; and column 5, lines 26-27), with control modes including a printing mode for maintaining the heating drum at the predetermined temperature during image-formation (See column 5, lines 38-41), and at least one ordinary mode (named “standby” mode in Hirose, but follows properties of specification-defined “ordinary” mode) which is used at times other than during image formation (See column 5, lines 52-55).

Hirose differs from the claimed invention in that it does not explicitly disclose the control device as being able to alter a period of on/off control in accordance with control modes. Nor does it explicitly disclose that if a period of on/off control of the printing mode is T_1 and a period of on/off control of at least one ordinary mode is T_0 , then $T_1 < T_0$. Hirose also differs from the claimed invention in that it does not explicitly disclose that the control device alters a duty ratio of on/off control in response to a difference between a current temperature of the heating drum and the predetermined temperature. Nor does it disclose that from a time when a power source of the image-forming device is turned on until a time when the predetermined temperature is reached, the period of on/off control of the heating drum is set to a period the same as the period of on/off control of the printing mode, and when the predetermined

Art Unit: 2853

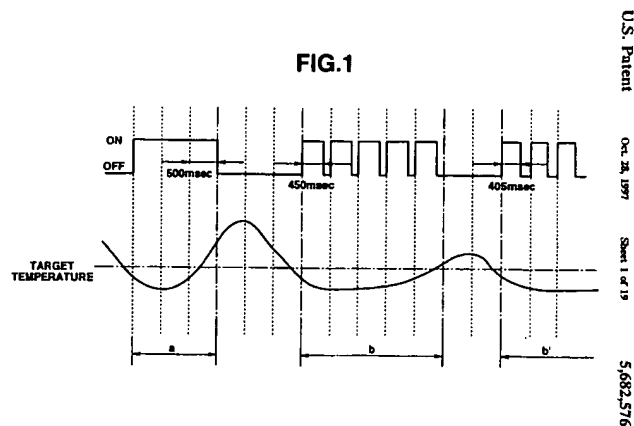
temperature has been reached, the ordinary mode is selected for maintaining the predetermined temperature.

Sakai discloses, with respect to claim 1, the ability to alter a period of on/off control in accordance with control modes (See figure 7; column 5, lines 22-63; column 8, lines 2-16. Period is altered in accordance with control means by increasing or decreasing lighting ratios).



Sakai also discloses, with respect to claim 1, that if a period of on/off control of the printing mode is T_1 and a period of on/off control of at least one ordinary mode is T_0 then $T_1 < T_0$ (See column 5, lines 23-28. The printing mode is disclosed to be “smaller than time periods of heating until the surface temperature of the fixing roller 1 exceeds a target temperature,” which can be construed as an ordinary mode, since image-formation is not occurring during this period.”)

Sakai discloses, with respect to claim 5, the altering of duty ratio of on/off control in response to a difference between a current temperature of the heating drum and the predetermined temperature (See abstract; figure 1; column 5, lines 34-48).



Sakai teaches, with respect to claim 6, “on/off of the heater is consecutively repeated by making a time period...until the surface temperature of the fixing roller 1 exceeds a target temperature (regions a, b, and b’).” (See column 5, lines 23-28). Thus, Sakai teaches that until the predetermined temperature (target temperature) is reached, the period of on/off control of the heating drum will be set to a period the same as the period of on/off control of the printing mode. Furthermore, Sakai discloses an ordinary (standby) mode when the predetermined temperature has been reached (See figure 1; column 5, lines 34-42).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Sakai into the invention of Hirose, so that the disclosed control device could alter a period of on/off control in accordance with control modes. The motivation for the skilled artisan in doing so is to gain the benefit of reducing abrupt temperature changes, which in turn, reduce variations in fixability of a fixing roller (See Sakai column 2, lines 27-32). This, in turn, helps prevent a phenomenon such as flickering. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Sakai into the invention of Hirose, so that if a period of on/off control of the printing mode is T_1 and a period of on/off control of at least one ordinary mode is T_0 then $T_1 < T_0$. The motivation for the skilled artisan in doing so is to gain the benefit of keeping a toner image in an excellent state by maintaining the temperature of the fixing roller; since the roller naturally heats faster than it cools, if $T_1 < T_0$ were not true, it would be

Art Unit: 2853

impossible to maintain the temperature of the fixing roller at an appropriate temperature (See Sakai figure 1; column 1, lines 55-67 and column 2, lines 1-3).

It would have also been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Sakai into the invention of Hirose, so that the control device could alter a duty ratio of on/off control in response to a difference between a current temperature of the heating drum and the predetermined temperature. The motivation for the skilled artisan in doing so is to maintain the temperature of the heating drum at the predetermined temperature, as well as reduce the power consumption of the heating drum while keeping the heating drum in a state such that image-formation can be initiated in a short time; if the temperature is not kept in check, overheating will occur, which can melt toners in a toner image, thus causing offset (See Kurotaka column 2, lines 14-23) and flawed image quality.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Sakai into the invention of Hirose, so that the period of on/off control of the heating drum is set to a period the same as the period of on/off control of the printing mode, and when the predetermined temperature has been reached, the ordinary mode is selected for maintaining the predetermined temperature. The motivation for the skilled artisan in doing so is to gain the benefit of being able to control the temperature of the heating drum, so that it remains near a set temperature. The advantages of this were mentioned above.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose, as applied to claim 1 above, in view of Kurotaka (US Pat 6243559), and further in view of Sakai (US Pat 5682576).

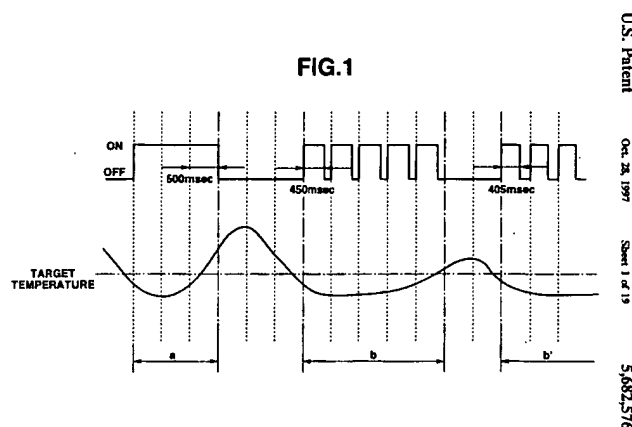
Hirose differs from the claimed invention in that it does not explicitly disclose that the ordinary mode includes a standby mode, which maintains the temperature of the heating drum at the pre-determined temperature such that image-formation can be initiated properly. Nor does it disclose a pre-heating mode which reduces the power consumption of the heating drum while keeping the heating drum in a state such tat image-formation can be initiated in a short time. Finally, it does not explicitly disclose that if the period of the on/off control of the printing mode is T1, a period of on/off control of the standby mode is T2, and a period of on/off control of the

Art Unit: 2853

pre-heating mode is T3, then at least one of the following relationships: $T1 < T2$ and $T1 < T3$ is satisfied.

Kurotaka teaches, with respect to claim 2, “Based on a temperature detection signal from the thermistor, a temperature control unit (not shown) controls the heater 5 so that the surface of the fixing belt 3 can be maintained at a predetermined temperature.” (See column 14, lines 64-67). Thus Kurotaka discloses a standby mode, based on the specification’s definition of standby mode. Furthermore, Kurotaka teaches, with respect to claim 2, “In order to shorten the rise time and same energy required in the belt fixing device, the heater should be witched off in the stand-by condition or an energy-saving mode (in which the fixing temperature in the stand-by condition is kept low so as to reduce energy consumption) should be employed.” (See column 5, lines 42-48). Thus Kurotaka discloses a pre-heating mode, based on the specification’s definition of pre-heating mode.

Sakai teaches, with respect to claim 2, “As shown in FIG. 1, in heater driving control when performing printing using this fixing device, on/off of the heater is consecutively repeated by making a time period, for example, 500 msec, which is smaller than time periods of heating until the surface temperature of the fixing roller 1 exceeds a target temperature (regions a, b, and b’), for one period.” (See figure 1; column 5, lines 22-27).



The “time periods of heating until the surface temperature of the fixing roller 1 exceeds a target temperature” represents the period of on/off control of the pre-heating mode T3. Thus, Sakai

Art Unit: 2853

discloses that the period of on/off control of the printing mode $T1 < \text{period of on/off control of the printing mode } T3$.

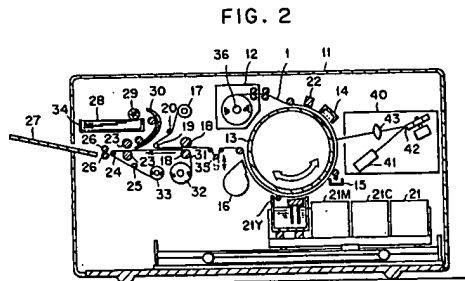
It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the standby and pre-heating modes disclosed by Kurotaka into the image-recording device disclosed by Hirose in order to maintain the temperature of the heating drum at the predetermined temperature, as well as reduce the power consumption of the heating drum while keeping the heating drum in a state such that image-formation can be initiated in a short time. The motivation for the skilled artisan in doing so is to prevent overheating, which can melt toners in a toner image, thus causing offset (See Kurotaka column 2, lines 14-23) and flawed image quality.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Sakai into the invention of Hirose, so that if the period of on/off control of the printing mode is $T1$, a period of on/off control of the standby mode is $T2$, and a period of on/off control of the pre-heating mode is $T3$, then the relationship $T1 < T3$ is satisfied. The motivation for the skilled artisan in doing so is to gain the benefit of keeping a toner image in an excellent state by maintaining the temperature of the fixing roller; since the roller naturally heats faster than it cools, if $T1 < T3$ were not true, it would be impossible to maintain the temperature of the fixing roller at an appropriate temperature (See figure 1; column 1, lines 55-67 and column 2, lines 1-3).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose, as applied to claim 1 above, in view of Imaeda (US Pat 5093689).

Hirose differs from the claimed invention in that it does not explicitly disclose that the information of the image is recorded onto a photosensitive material by exposure, and the image is formed on a transfer material, which is superposed with the photosensitive material at the heating drum.

Imaeda does disclose, with respect to claim 4, that the information of the image is recorded onto a photosensitive material by exposure, and the image is formed on a transfer material, which is superposed with the photosensitive material at the heating drum (See abstract; figure 2, references 1, 18, and 31; column 1, lines 38-44; column 3, lines 30-34).



U.S. Patent
Mar. 3, 1993
Sheet 2 of 3
5,093,689

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Imaeda into the invention of Hirose, so that the information of the image is recorded onto a photosensitive material by exposure, and the image is formed on a transfer material which is superposed with the photosensitive material at the heating drum. The motivation for the skilled artisan in doing so is to gain the benefit of effectively forming an image; the use of photosensitive and transfer materials in an image forming apparatus with a fixing unit is well known to one of ordinary skill in the art. (See Imaeda column 1, lines 7-29).

6. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose, in view of Kurotaka and Sakai, as applied to claim 2 above.

Hirose teaches, with respect to claim 7, "In a case where there is no printing instruction for the predetermined time t_4 , the photosensitive drum, the optical system, and the fixing unit are controlled in the standby mode. Thus, Hirose discloses an image-forming device, wherein, when image-formation has finished, the printing mode is deselected and the standby mode is selected.

Hirose in view of Kurotaka and Sakai differs from the claimed invention in that it does not explicitly disclose that if the standby mode is selected and no image-formation is performed for a predetermined period of time, then the heating mode is selected. Nor does it disclose that the information of the image is recorded onto a light and heat sensitive material by exposure, and the image is formed on the light and heat sensitive material by heating at the heating drum.

Sakai does disclose, with respect to claim 8, that if the standby mode is selected and no image-formation is performed for a predetermined period of time, then the heating mode is selected (See figure 1; column 5, lines 39-48. Here, based on the definitions in the specification, the off-state is equivalent to standby mode and the reduced on-time corresponds to the pre-heating mode).

Sakai also discloses, with respect to claim 9, that in the pre-heating mode, the heating drum is maintained at a temperature lower than the predetermined temperature (See figure 1, reference b; column 5, lines 44-48).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Sakai into the invention of Hirose in view of Kurotaka and Sakai such that if the standby mode is selected and no image-formation is performed for a predetermined period of time, then the pre-heating mode is selected. The motivation for the skilled artisan in doing so is to reduce power consumption and prevent overheating. The advantages of this were mentioned above, as applied to claim 2.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Sakai into the invention of Hirose in view of Kurotaka and Sakai such that in the pre-heating mode, the heating drum is maintained at a temperature lower than the predetermined temperature. The motivation for the skilled artisan in doing so is to reduce power consumption and prevent overheating. The advantages of this were mentioned above, as applied to claim 2.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose, as applied to claim 1 above, in view of Suzuki (US Pat 5994671).

Hirose differs from the claimed invention in that it does not explicitly disclose another temperature control signal at the image-forming device, and a temperature control signal of the heating drum has a phase difference with respect to the other temperature control signal.

Suzuki teaches, with respect to claim 10, "Since the film-heating fixing has low heat capacity, temperature ripple is increased in ON/OFF control which is commonly used in the roller type fixing devices. In consideration of this fact, accuracy of the temperature control is improved by changing electric power in accordance with a difference between a target

Art Unit: 2853

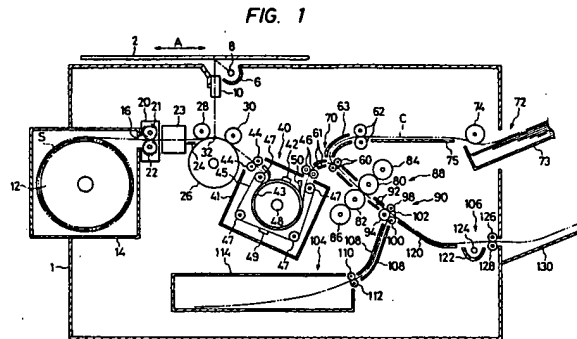
temperature and an actual temperature by using a means for continuously or steppingly changing the electric power by phase control or wave number control.” (See column 2, lines 17-25)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Suzuki into the invention of Hirose, such that there is another temperature control signal at the image-forming device, and a temperature control signal of the heating drum has a phase difference with respect to the other temperature control signal. The motivation for the skilled artisan in doing so is to gain the benefit of reducing temperature ripple and increasing the accuracy of temperature control (See Suzuki column 2, lines 17-25). Furthermore, Suzuki discloses that this property is “commonly used in the roller type fixing devices,” of which, the invention of Hirose is one example. Thus, it would have been further obvious to make such a modification.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose, as applied to claim 1 above, in view of Nagumo (US Pat 5128709).

Hirose differs from the claimed invention in that it does not explicitly disclose that the information of the image is recorded onto a light and heat sensitive material by exposure, and the image is formed on the light and heat sensitive material by heating at the heating drum.

Nagumo does disclose, with respect to claim 11, that the information of the image is recorded onto a light and heat sensitive material (See figure 1, reference 12) by exposure, and the image is formed on the light and heat sensitive material by heating at the heating drum (See figure 1, reference 43; column 7, lines 8-24).



U.S. Patent
July 7, 1992
Sheet 1 of 3
5,128,709

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Nagumo into the invention of Hirose, so that the information is recorded onto a light and heat sensitive material by exposure, and the image is formed on the light and heat sensitive material by heating at the heating drum. The motivation for the skilled artisan in doing so is to gain the benefit of effectively forming an image; the use of light and heat sensitive materials in an image forming apparatus with a fixing unit is well known to one of ordinary skill in the art, as discussed in claim 4 above.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose in view of Sakai, and further in view of Imaeda, and still further in view of Kurotaka.

Hirose discloses, with respect to claim 12, an image-forming device, which heats a heating drum to a predetermined temperature, the device comprising: a heating device which heats the heating drum; and a control device which controls the heating device by on/off control, with control modes including a printing mode for maintaining the heating drum at the predetermined temperature during image-formation, as discussed above in claim 1.

Hirose differs from the claimed invention in that it does not explicitly disclose the control device as being able to alter a period of on/off control in accordance with control modes. Hirose also differs from the claimed invention in that it does not explicitly disclose that image information is exposed and carried by photosensitive material, and an image is formed on transfer material by the transfer material being supported with photosensitive material at a

Art Unit: 2853

heating drum. Nor does it explicitly disclose a standby mode for keeping the heating drum in a state such that image-formation can be initiated promptly, and a pre-heating mode for reducing power consumption of the heating drum while keeping the heating drum in a state such that image-formation can be initiated in a short time, wherein, if a period of on/off control of the printing mode is $T1$, a period of on/off control of the standby mode is $T2$, and a period of on/off control of the pre-heating mode is $T3$, then $T2 \geq T1$, $T3 \geq T1$, and at least one of $T2$ and $T3$ is greater than $T1$.

Sakai discloses, with respect to claim 1, the ability to alter a period of on/off control in accordance with control modes, as discussed above in claim 1. Sakai also discloses that wherein, if a period of on/off control of the printing mode is $T1$, a period of on/off control of the standby mode is $T2$, and a period of on/off control of the pre-heating mode is $T3$, then $T2 \geq T1$ (See figure 1; column 5, lines 22-31. Notice $T1 = T2$), $T3 \geq T1$ (See figure 1; column 5, lines 22-27. $T3 > T1$), and at least one of $T2$ and $T3$ is greater than $T1$, as discussed above in claim 2.

Imaeda discloses, with respect to claim 12, that image information is exposed and carried by photosensitive material, and an image is formed on transfer material by the transfer material being supported with photosensitive material at a heating drum, as discussed above in claim 4.

Kurotaka discloses, with respect to claim 12, a standby mode for keeping the heating drum in a state such that image-formation can be initiated promptly, and a pre-heating mode for reducing power consumption of the heating drum while keeping the heating drum in a state such that image-formation can be initiated in a short time, as discussed above in claim 2.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Sakai into the invention of Hirose, so that the disclosed control device could alter a period of on/off control in accordance with control modes. The motivation for the skilled artisan in doing so is to gain the benefit of reducing abrupt temperature changes, which in turn, reduce variations in fixability of a fixing roller (See Sakai column 2, lines 27-32). This, in turn, helps prevent a phenomenon such as flickering. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Sakai into the invention of Hirose, so that if the period of on/off control of the printing mode is $T1$, a period of on/off control of the standby mode is $T2$,

Art Unit: 2853

and a period of on/off control of the pre-heating mode is T_3 , then the relationships $T_2 \geq T_1$, $T_3 \geq T_1$, and at least one of T_2 and T_3 is greater than T_1 are satisfied. The motivation for the skilled artisan in doing so is to gain the benefit of keeping a toner image in an excellent state by maintaining the temperature of the fixing roller; since the roller naturally heats faster than it cools, if these relationships were not true, it would be impossible to maintain the temperature of the fixing roller at an appropriate temperature (See figure 1; column 1, lines 55-67 and column 2, lines 1-3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Imaeda into the invention of Hirose, so that image information is exposed and carried by photosensitive material, and an image is formed on transfer material by the transfer material being supported with photosensitive material at a heating drum. The motivation for the skilled artisan in doing so is to gain the benefit of effectively forming an image; the use of photosensitive and transfer materials in an image forming apparatus with a fixing unit is well known to one of ordinary skill in the art. (See Imaeda column 1, lines 7-29).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the standby and pre-heating modes disclosed by Kurotaka into the image-recording device disclosed by Hirose in order to maintain the temperature of the heating drum at the predetermined temperature, as well as reduce the power consumption of the heating drum while keeping the heating drum in a state such that image-formation can be initiated in a short time. The motivation for the skilled artisan in doing so is to prevent overheating, which can melt toners in a toner image, thus causing offset (See Kurotaka column 2, lines 14-23) and flawed image quality.

Allowable Subject Matter

10. Claims 3 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 3 and 13 include the limitation of a "image forming device... wherein the periods T_1 , T_2 , and T_3 are set so as to satisfy the relationship $T_1 < T_2 < T_3$," which was not found,

Art Unit: 2853

taught, or suggested in the prior arts. However, $T3 \geq T2 \geq T1$ was found, taught, or suggested in the prior arts.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Watanabe (US Pat 6097905) discloses an image heating apparatus.

Yamamoto (US Pat 6185388) discloses an image heating apparatus with standby temperature overshooting prevention feature.

Koh (US Pat 4988121) discloses an image forming apparatus.

Kato (US Pat 4754294) discloses an electrophotographic printer.

Muto (US Pat 5426494) discloses an electrophotographic device and method for shortening a print time.

Dornier (US Pat 5489935) discloses a laser printer power saver.

Yoshida (US Pat 5321479) discloses an electrophotographic apparatus.

Kishimoto (US Pat 5220389) discloses an image forming apparatus having a controlled fixing means.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (703) 305-4754. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703) 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

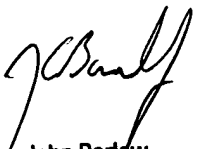
Application/Control Number: 09/899,530

Page 16

Art Unit: 2853

lsl

May 17, 2002



John Barlow
Supervisory Patent Examiner
Technology Center 2800